

I claim:

1. A system for dissolving and separating expanded polystyrene, comprising:

5 a first tank having at least one applicator;

a second tank having at least one settlement compartment therein and a filtration system;

said filtration system having a cartridge of at least one porous shell packed with a filtering material;

10 at least one flow communication path between said first and second tank.

2. The system for dissolving and separating expanded polystyrene of claim 1, said first tank being a hopper and having at least one fluid outlet.

15 3. The system for dissolving and separating expanded polystyrene of claim 2, said at least one fluid outlet being in flow communication with a strainer.

4. The system for dissolving and separating expanded polystyrene of claim 2, said first tank being in flow
20 communication with said second tank.

5. The system for dissolving and separating expanded polystyrene of claim 1 further comprising a first pump in flow communication with said first tank and said second tank.

6. The system for dissolving and separating expanded
5 polystyrene of claim 5, said first pump in flow communication with a strainer on a suction side thereof.

7. The system for dissolving and separating expanded polystyrene of claim 6, said first pump removing a resin and an organic solvent from said first tank and discharging in said
10 second tank.

8. The system for dissolving and separating expanded polystyrene of claim 1, said second tank having a weir in said at least one settlement compartment.

9. The system for dissolving and separating expanded
15 polystyrene of claim 8, said filtration system having a plurality of porous shells, each of said shells having a plurality of flow-through apertures therein.

10. The system for dissolving and separating expanded polystyrene of claim 9, said porous shells being a plurality of
20 PVC pipes.

11. The system for dissolving and separating expanded polystyrene of claim 9, said porous shells each having a wick disposed therein.

12. The system for dissolving and separating expanded
5 polystyrene of claim 11, said wick being polypropylene rope.

13. The system for dissolving and separating expanded polystyrene of claim 8, said filtration system forming a first compartment within said second tank.

14. The system for dissolving and separating expanded
10 polystyrene of claim 8, said second tank, said filtration system, and said weir forming a second compartment.

15. The system for dissolving and separating expanded polystyrene of claim 14, said weir and said second tank defining a third compartment.

15 16. The system for dissolving and separating expanded polystyrene of claim 1 further comprising a second pump in flow communication with said second tank.

17. The system for dissolving and separating expanded polystyrene of claim 16, said second pump removing an organic
20 solvent from said second tank and discharging in said first tank.

18. The system for dissolving and separating expanded polystyrene of claim 17, said second pump in flow communication with said at least one applicator nozzle disposed in a spray bar.

5 19. A system for dissolving and separating expanded polystyrene, comprising:

a first bulk feeder having at least one applicator;

at least one separator tank in flow communication with said bulk feeder;

10 a filtration system in flow communication with said at least one separator tank;

said filtration system comprising a cartridge having at least one porous shell and a wicking material packed inside said shell;

15 at least one pump disposed between and in flow communication with said bulk feeder and said separator tank.

20. The system for dissolving and separating expanded polystyrene of claim 19, said bulk feeder further comprising a strainer in flow communication with a fluid outlet.

20 21. The system for dissolving and separating expanded polystyrene of claim 19 further comprising a first pump being in

flow communication with said bulk feeder and said separator tank.

22. The system for dissolving and separating expanded polystyrene of claim 19, said bulk feeder gravity feeding a waste solution to said at least one separator tank.

23. The system for dissolving and separating expanded polystyrene of claim 19, said at least one separator tank having a first compartment, a second compartment, and a third compartment.

24. The system for dissolving and separating expanded polystyrene of claim 23, said first and second compartments being in flow communication with said filtration system.

25. The system for dissolving and separating expanded polystyrene of claim 22, said filtration system having a frame and a plurality of porous shells disposed within said frame.

26. The system for dissolving and separating expanded polystyrene of claim 25, said plurality of porous shells being PVC pipes having a plurality of flow through apertures therein.

27. The system for dissolving and separating expanded polystyrene of claim 26, said at least one PVC pipe having a polypropylene rope disposed therein.

28. The system for dissolving and separating expanded polystyrene of claim 27, said filtration system in direct fluid communication with a first settlement compartment and a second settlement compartment.

5 29. The system for dissolving and separating expanded polystyrene of claim 28, further comprising a weir disposed between said second compartment and a third compartment.

30. The system for dissolving and separating expanded polystyrene of claim a 29, said first, second, and third
10 settlement compartments being separate settlement tanks in flow communication.

31. The system for dissolving and separating expanded polystyrene of claim 19, said at least one separator tank in flow communication with said at least one bulk feeder and, said
15 at least one pump in flow communication there between.

32. The system for dissolving and separating expanded polystyrene of claim 31, said at least one pump in flow communication with a recirculation bar, said recirculation bar having a plurality of nozzles.

20 33. The system for dissolving and separating expanded polystyrene of claim 19, said bulk feeder having at least one hingedly connected cover.

34. The system of claim 19, said separator tank having a vent extending therefrom.

35. A system for dissolving and separating expanded polystyrene, comprising:

5 a reduction tank having a spray applicator;

at least one settlement tank defining at least one settlement compartment;

said reduction tank being in flow communication with said at least one settlement tank;

10 said settlement tank having a first, a second, and a third settlement compartment;

a filtration system disposed between said first and second settlement compartments having at least one porous shell, said at least one shell having a wick material therein.

15 36. The system for dissolving and separating expanded polystyrene of claim 35, said reduction tank being in flow communication with said at least one settlement tank.

37. The system for dissolving and separating expanded polystyrene of claim 36, a first pump being in flow

20 communication with and disposed between said reduction tank and said at least one settlement tank.

38. The system for dissolving and separating expanded polystyrene of claim 35, said at least one porous shell being at least one PVC pipe having a plurality of flow-through apertures therein.

5 39. The system for dissolving and separating expanded polystyrene of claim 38, said at least one porous shell being packed with a wick material.

40. The system for dissolving and separating expanded polystyrene of claim 39, said wick material being polypropylene
10 rope.

41. The system for dissolving and separating expanded polystyrene of claim 36, further comprising a pump disposed between said third compartment and said reduction tank and having a flow communication path therebetween.

15 42. The system for dissolving and separating expanded polystyrene of claim 36, further comprising an agitator.